

## WHAT IS CLAIMED IS:

1. A digital camera image controller apparatus for a mobile phone,  
comprising:

an LCD module, as a display means of the mobile phone, to display  
5 information for communication;

a baseband processor, connected to circuit of the mobile phone in  
order to perform required communication processing;

a sensing module, to sense optical signal of an external image and  
accordingly produce an RGB image signal; and

10 an image controller, having:

a color interpolation device, to interpolate color for each pixel of the  
RGB image signal produced by the sensing module and thus obtain an  
interpolated RGB image signal with complete color information;

an RGB-to-YUV converter, to convert the interpolated RGB image  
15 signal into a YUV image signal;

a YUV-to-RGB converter, to convert the YUV image signal into the  
interpolated RGB image signal;

a compression engine, to compress or decompress the YUV image  
signal in order to produce a compressed or decompressed YUV image  
20 signal; and

a buffer, to temporarily store the interpolated RGB image signal and  
the compressed YUV image signal,

wherein the interpolated RGB image signal in the buffer is able to  
directly display on the LCD module, the compressed YUV image signal in

the buffer is sent to the baseband processor for further processing or to the compression engine for decompression and subsequently the YUV-to-RGB converter converts the decompressed YUV image signal into the interpolated RGB image signal for displaying on the LCD module.

5           2. The apparatus as claimed in claim 1, wherein the sensing module includes a lens and a sensor respectively to collect optical signal of the external image and sense the optical signal for producing the RGB image signal.

10           3. The apparatus as claimed in claim 1, wherein the compression engine is a JEEG codec.

          4. The apparatus as claimed in claim 1, further comprising a sensor interface connected to the sensing module.

          5. The apparatus as claimed in claim 1, further comprising a display interface connected to the LCD module.

15           6. The apparatus as claimed in claim 1, further comprising a host interface connected to the baseband processor.

          7. The apparatus as claimed in claim 1, wherein, in operating, both the interpolated RGB image signal and the compressed YUV image signal temporarily stored in the buffer come from the sensing module.

20           8. The apparatus as claimed in claim 1, wherein, in operating, both the interpolated RGB image signal and the compressed YUV image signal temporarily stored in the buffer come from the baseband processor.

          9. The apparatus as claimed in claim 1, wherein, in operating, the baseband processor directly displays an image, which exists in the mobile

phone, on the LCD module through the image controller, without activating the color interpolation device, RGB-to-YUV converter and compression engine of the image controller and the sensing module.

10. The apparatus as claimed in claim 1, wherein; the image  
5 controller further comprises a color correction device arranged in between the color interpolation device and RGB-to-YUV converter to correct nonlinear color response due the electronic sensor characteristics and different light sources.